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REMARKS

Pending Claims

Claims 57, 62-64, 70-72, and 80 have been amended in order to more clearly describe Applicants' invention. More specifically, claim 57 has been amended to further clarify the group "polymer", claims 62-64 and 70-72 have been amended to clarify the attached chemical group, and claim 80 has been amended to include the features of claim 82 as well as to correct a typographical error. No new matter has been added. Thus, claims 57, 67, 70-72, 80, 82, and 84-86 are pending.

Summary of the Invention

The present invention relates to modified pigment products comprising a pigment having attached at least one aromatic or alkyl group X which is substituted with at least one group comprising the formula [polymer]R. Ink compositions and, in particular, inkjet ink compositions comprising these modified pigment products are also disclosed.

Claim Objections

In paragraph 3 of the Office Action, the Examiner objects to claims 80 and 84-85 due to the presence of a period after the word "pigment" in line 12 of claim 80 and advises deleting this period. Applicants have amended claim 80 as suggested by the Examiner in order to correct this typographical error.

In paragraph 4 of the Office Action, the Examiner objects to claim 82 as being of improper dependent form for failing to further limit the subject matter of a previous claim. In particular, the Examiner states that claim 82, which depends from claim 80, recites that the additional polymer is a styrenated acrylate. The Examiner further states that claim 80 recites

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various additional polymers and lists styrene-acrylate polymers from claim 80. The Examiner concludes that claim 82 fails to further the subject matter of the claim on which it depends given that claim 82 is broader than claim 80, noting that the recitation of "styrenated acrylate" in claim 82 encompasses polymer in addition to those recited in claim 80, such as styrene-alkyl(meth)acrylate copolymers.

Applicants have amended claim 80 to include "styrenated acrylates" as recited in claim 82 and supported by the present specification. Thus, claim 82, which depends from claim 80, recites a more specific feature than claim 80 from which it depends. Applicants therefore believe that claim 82 is now in proper dependent form.

Therefore, Applicants believe that the objections to claims 80, 82, 84 and 85 have been addressed and these claims are in condition for allowance.

Rejection of Claims under 35 U.S.C. § 112

The Examiner has rejected claims 62-64 and 70-72 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

In paragraph 6 of the Office Action, the Examiner states that claim 62, which depends from claim 57, recites a modified pigment "further comprising a second chemical group attached to said pigment". The Examiner further states that the scope of the claim is confusing given that there is no disclosure in claim 57 of a "first chemical group" or even a "chemical group". The Examiner concludes that, since there is no reference to a first or previous chemical group, it is not clear why claim 62 refers to a "second" chemical group and requests clarification. The Examiner notes that similar questions arise with respect to claim 70, which depends from claim 65 and recites similar language as claim 62.

Applicants respectfully disagree. The term "second chemical group" used in claims 62-64, which depend from claim 57, and claims 70-72, which depend from claim 65, is used to differentiate an additional attached group from the attached at least one aromatic or alkyl group

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X substituted with at least one group comprising the formula $[\text{polymer}]R$ recited in claims 57 and 65. This is supported in the present specification, in particular, page 9, lines 34-35 and Examples 12-14, as well as page 8, line 16 to page 9, line 14, which lists various types of pigments, some of which would be recognized by one skilled in the art as having attached chemical groups (for example, oxidized carbon blacks having oxygen-containing groups such as carboxylic acid groups attached).

In order to more clearly define the invention, Applicants have amended claims 62-64 by deleting the word "second". Thus, claim 62 recites "the modified pigment product of claim 57, further comprising a chemical group attached to said pigment". By "further comprising" an attached chemical group, Applicants believe this differentiates the chemical group from the attached aromatic or alkyl group X substituted with at least one group comprising the formula $[\text{polymer}]R$ that is recited in claim 57 and also provides the clarification requested by the Examiner. Claims 63-64 have also been amended to more clearly define further embodiments of the invention regarding the types of attached chemical groups. Similar amendments have been made to claims 70-72.

Therefore, Applicants believe that claims 62-64 and 70-72 are not indefinite and respectfully request this rejection be withdrawn.

Rejection of Claims under 35 U.S.C. § 102

Cooke et al.

The Examiner has rejected claims 57-60 under 35 U.S.C. § 102(e) as being anticipated by Cooke et al. (U.S. Patent No. 6,110,994).

In paragraph 8 of the Office Action, the Examiner states that Cooke et al. discloses a modified pigment having an attached of the formula $\text{Ar-CO}_2\text{-R}$ where Ar is an aromatic group and R is a polymer such as a polyamide or polyester and that it is further disclosed that the polymer can include aromatic or alkyl groups. The Examiner concludes that, in light of this, it is clear that Cooke et al. anticipates the present claims.

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Applicants respectfully disagree. As amended, claim 57 recites that "polymer" represents a polycarbonate group, a polyether group, a polyimide group, a polyurethane group, poly(vinyl alcohol), or combinations thereof. Thus, "polymer" does not represent a polyamide or polyester group, as described in Cooke et al. Since Cooke et al. does not disclose the polymers recited in claim 57, Applicants believe that claim 57 is not anticipated by this reference. Claims 58-60, which depend directly from claim 57, recite further embodiments of the present invention and should therefore also be found to be not anticipated by this reference.

Applicants therefore believe that claims 57-60 are not anticipated by Cooke et al. and respectfully request that this rejection be withdrawn.

Whitehouse et al.

The Examiner has rejected claim 86 under 35 U.S.C. § 102(e) as being anticipated by Whitehouse et al. (U.S. Patent No. 6,337,358).

In paragraph 9 of the Office Action, the Examiner states that Whitehouse et al. discloses modified pigments comprising a pigment having attached a group of the formula $\Lambda-R^1-C(R^2)(R^3)-X-SFR$, where Λ is an aromatic or alkyl group corresponding to group X as presently claimed, X is a polymer, and SFR is $O-Ar^2$, where Ar is an aromatic group corresponding to presently claimed R. The Examiner further states that it is disclosed that the above group can be terminated with hydrogen instead of SFR and that the polymer includes that obtained from monomers such as alkyl(meth)acrylate which comprises an alkyl group corresponding to presently claimed X group. The Examiner also notes that there is disclosed an ink jet ink which comprises a liquid vehicle and the above modified pigment. The Examiner concludes that, in light of the above, it is clear that Whitehouse et al. anticipates the present claim.

Applicants respectfully disagree. Claim 86 recites an ink composition comprising at least one modified pigment product comprising a pigment having attached at least one aromatic or alkyl group X. X is substituted with at least one group comprising the formula

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[polymer]R, wherein "polymer" represents repeating monomer groups or multiple monomer groups or both having at least one -X' group. Each X and X' are the same and are attached to the pigment. By comparison, as noted by the Examiner, Whitehouse et al. discloses modified pigments comprising a pigment having attached a group of the formula $A-R^1-C(R^2)(R^3)-X-SFR$. A is an aromatic or alkyl group corresponding to group X as presently claimed, and X is a polymer that can include that obtained from monomers such as alkyl(meth)acrylates. However, if one were to equate the alkyl group of the alkyl(meth)acrylate to be X', as stated by the Examiner, while A (corresponding to X of claim 86) and this alkyl group (potentially corresponding to X' of claim 86) would be the same, as recited in claim 86, there is no disclosure in Whitehouse et al. that this alkyl group is attached to the pigment, which is also recited in claim 86. It is important to note that, in claim 86, both X and X' are attached to the pigment, and Whitehouse et al. does not disclose a modified pigment having such an attachment.

Therefore, Applicants believe that claim 86 is not anticipated by Whitehouse et al. and respectfully request that this rejection be withdrawn.

Rejection of Claims under 35 U.S.C. § 103

The Examiner has rejected claims 62-64 under 35 U.S.C. § 103(a) as being unpatentable over Cooke et al. (U.S. Patent No. 6,110,994) in view of Johnson et al. (U.S. Patent No. 5,837,045).

In paragraph 12 of the Office Action, the Examiner incorporates by reference the statements concerning Cooke et al. discussed above and states that the difference between Cooke et al. and the present claimed invention is the requirement in the claims of a modified pigment comprising a second chemical group. The Examiner therefore relies on Johnson et al., stating that this reference, which is drawn to modified pigments, discloses pigments having attached chemical groups such as carboxyphenyl or sulfohenyl in order to produce pigments that are more easily dispersible and have greater stability than untreated pigments. The Examiner concludes that, in light of the above, it would have been obvious to one of ordinary skill in the

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art to attach chemical groups such as carboxyphenyl or sulfophenyl to the modified pigments of Cooke et al. in order to produce pigments with improved dispersibility and stability, thereby arriving at the claimed invention.

Applicants respectfully disagree. As amended, claims 62-64, which depend either directly or indirectly from claim 57, recites a modified pigment comprising a pigment having attached at least one aromatic or alkyl group substituted with at least one group comprising the formula $-(\text{polymer})\text{R}$, wherein "polymer" represents a polycarbonate group, a polyether group, a polyimide group, a polyurethane group, poly(vinyl alcohol), or combinations thereof. The modified pigment of these claims further comprises a chemical group attached to the pigment.

By comparison, Cooke et al., in part, teaches modified pigments having attached polyamide or polyester groups. However, as discussed in more detail above, Cooke et al. does not teach or suggest any of the types of polymers recited in claim 57, from which claims 62-64 depend. Johnson et al. does not cure this deficiency. Furthermore, while Johnson et al. discloses pigments having attached carboxyphenyl or sulfophenyl groups, if one skilled in the art were to combine these references, which Applicants believe would not be done, the result would be a modified pigment having attached polyamides or polyester groups and attached carboxyphenyl or sulfophenyl groups. This is not the modified pigment of claims 62-64, which recites attached groups comprising classes of polymers that are unrelated to polyamides or polyesters.

Applicants therefore believe that claims 62-64 are patentable over Cooke et al. in view of Johnson et al. and respectfully request that this rejection be withdrawn.

Allowable Subject Matter

In paragraph 13 of the Office Action, the Examiner has objected to claim 61 as being dependent upon a rejected base claim but further states that this claim would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims.

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Applicants are grateful for the allowable subject matter of claim 61. However, Applicants do not believe that the base claim (claim 57) is properly rejected, as discussed in more detail above. Therefore, Applicants believe that no amendments are needed to claim 61 at this time and that this claim is in proper form for allowance.


In paragraph 14 of the Office Action, the Examiner states that claims 65-67 are allowable over the "closest" prior art of record. Applicants wish to thank the Examiner for the allowance of claims 65-67. However, in view of the comments provided herein, Applicants further believe that claims 57-64, 70-72, 80, 82, and 84-86 should also be found allowable.

Conclusion

In view of the foregoing remarks, Applicants believe that this application is considered to be in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would further expedite the prosecution of the subject application, the Examiner is invited to call the undersigned.

Respectfully submitted,

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